

***MULTISCALE VARIATIONS OF SURFACE CLOUD RADIATIVE FORCING AND
CLOUD FRACTION OVER THE ARM SGP SITE: OBSERVATIONS VS.
REANALYSES***

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ABSTRACT

Multiscale (diurnal, annual and interannual) variations of surface cloud radiative forcing and cloud fraction in reanalyses data are evaluated using the decade-long (1997-2009) surface-based measurements collected at the ARM SGP site. Our preliminary results indicate that the reanalyses data do not show the significant annual cycle of surface shortwave cloud radiative forcing as indicated in the observations. Further comparison shows that the reanalyses data suffer from substantial biases compared to the ARM measurements at all scales. Potential influences of these biases on evaluation of surface properties (surface temperature, surface albedo, surface latent heat flux, etc) are also investigated. The results will be useful for improving the parameterizations of cloud-related processes in models in general and the quality of the reanalyses data in particular.